CyReL CaTTamaran Installation Instructions for TT Motherboard Revision Rev. A

This text will briefly describe the installation of the CyReL CaTTamaran TT Accelerator in systems with the first TT motherboard revision (Rev. A)

WARNING

Opening your Atari computer and installing the CyReL CaTTamaran may void the warranty of your computer system. Refer to your documentation before attempting the following installation process.

INSTALLATION

Disassemble the TT to gain full access to the motherboard. Please note that this text describes the installation for systems equipped with a CPU daughterboard. If you do not have such a daughterboard in your computer, please refer to the alternate installation instructions available from Cybercube. These additional parts are necessary to install a CyReL CaTTamaran in the older motherboards: 1 x 74F00 (or 74F04), 4 x 33 ohms resistors and a a few inches/centimeters of wire of the same type already found on the CyReL CaTTamaran. The parts can be obtained from any good electronics store or Cybercube directly (Order code CRL17002).

To begin, lift the TT motherboard completely out of the plastic case and remove the metal shielding protecting the underside of the board. Turn it upside down. Disconnect the patchwire that has been attached to pin 32 of the TT Video Shifter (C300868-001). The patchwire normally runs from this pin to pin 11 of the FPU (MC68882FN33A). The free end of this patchwire will have to be connected later to one of the signals of the CyReL CaTTamaran. Find a convenient place near the VME bus ribbon cables to bring this patchwire to the topside of the TT motherboard. Re-install the TT-motherboard. Connect the black CyReL CaTTamaran clip to the upper right pin of connector J602 (besides the SER#1 & SER#2 ribbon cable connectors).

Locate U4 on the CPU daughterboard (see figure). Take a wire cutter and cut pin 12 of U4 as shown here:
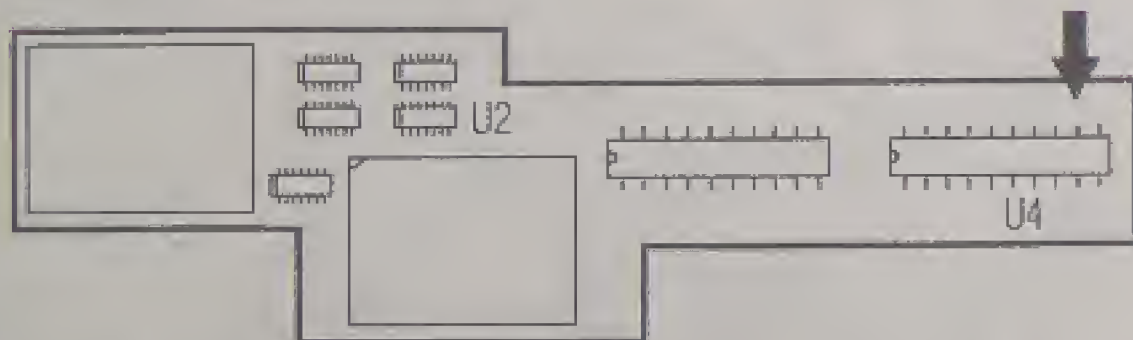

Take a 74F00 (or 74F04, but notice the different pin layout on the F04!). Solder it in piggyback fashion ontop of U4, connecting pin 14 (VCC) of the 74F00 to pin 20 of U4 and pin 7 (GND) of the 74F00 to pin 10 of U4. Keep these wires short. Connect pin 8 of the 74F00 to the part of the old pin 12 of U4 that is still in the BOARD! Keep this wire as SHORT as possible. Bend one of the 33 ohms resistors in an 'U' shape like this:
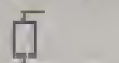
Solder the short end (approx. 1/16" or 2 mm) of the 33 ohms resistor to pin 1 of U4 as shown in the next figure. Take the second 33 ohms resistor and bend it in an 'L' shape, cut one of the ends to 1/16" or 2 mm. Solder the short end to pin 5 of U2 as shown here:
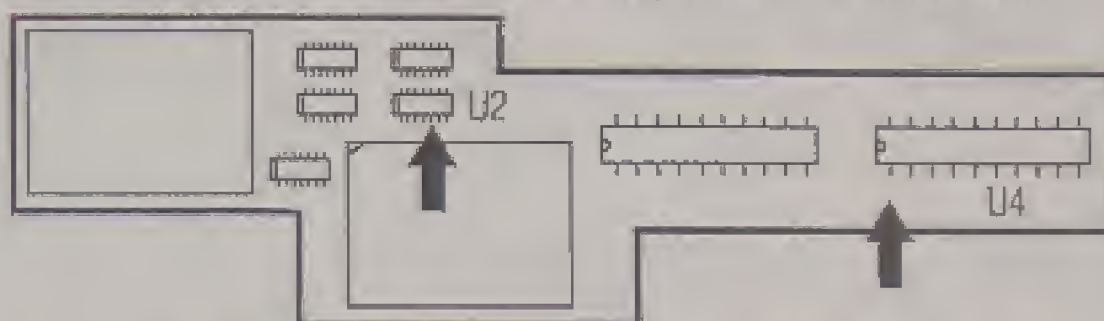
Remove the three pin connector, the red clip and the green clip from the CyReL CaTTamaran wires (if still present). Connect the wire ‹E› (Rev.A CaTTamaran boards) or wire ‹A› (Rev.B CaTTamaran boards) to pin 18 of U4 as shown here:
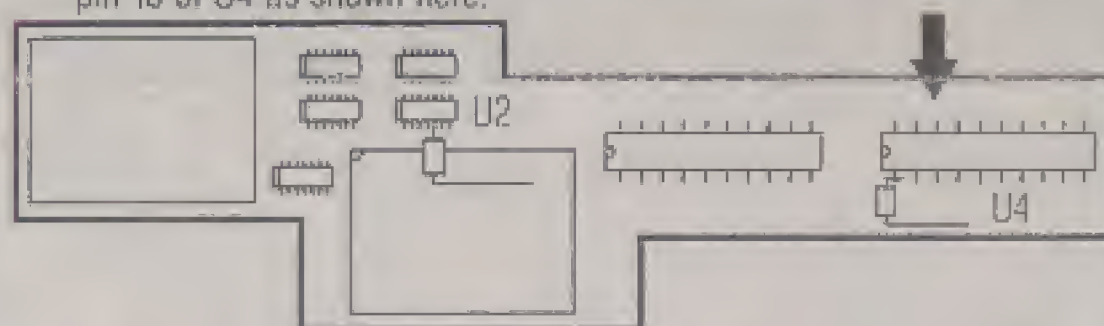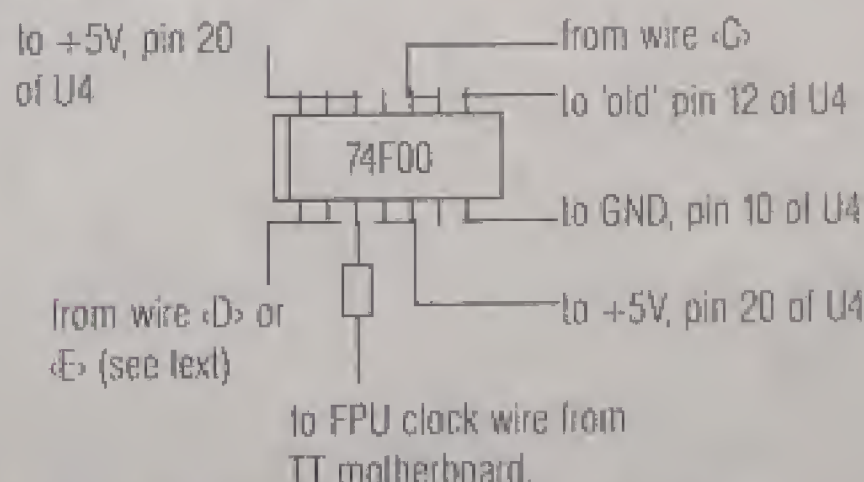

Remove wire ‹B› (Rev.A CaTTamaran boards) or wire ‹D› Rev.B CaTTamaran boards) from the CaTTamaran and solder the third 33 ohms resistor to the same connection as the wire before. Then, solder the wire back to the other end of this 33 ohms resistor. Take the free end of this wire and solder it to the 33 ohms resistor on pin 1 of U4.

Take the free end of the wire ‹G› (Rev.A CaTTamaran boards) or wire ‹F› (Rev.B CaTTamaran boards) and solder it to the 33 ohms resistor connected to pin 5 of U2. Take a piece of wire and twist it around this wire connecting one end to pin 7 of U2 (GND) and the other end to any of the two leftmost pins of the 2 x 15 pin connector on the CyReL CaTTamaran (near the large mounting hole).

The last step is to finish the wiring of the 74F00 (or 74F04). Connect pins 4 & 5 as well as 13 & 12 to pin 14 (VCC). Connect the wire ‹C› of the CyReL CaTTamaran to pins 9 & 10. Take a piece of wire and twist it around the wire ‹C› connecting one end to pin 7 of the 74F00 and the other end again to one of the leftmost pins on the 2 x 15 pins connector of the CyReL CaTTamaran.

Connect the wire ‹D› (Rev.A CaTTamaran boards) or wire ‹E› (Rev.B CaTTamaran boards) to pins 1 & 2. Solder the last 33 ohms resistor to pin 3. Solder a short wire (3" or 7,5 cm) to this resistor. Connect the free end of the wire with the FPU clock signal wire that had been removed earlier from underneath the TT motherboard. The complete 74F00 wiring should look like this:

to +5V, pin 20 of U4
from wire ‹C›
to 'old' pin 12 of U4
74F00
to GND, pin 10 of U4
to +5V, pin 20 of U4
from wire ‹D› or ‹E› (see text)
to FPU clock wire from TT motherboard.

CyReL CaTTamaran Installation Instructions for TT Motherboard Revision Rev. B

This text describes the installation of the CyReL CaTTamaran TT Accelerator in systems with the TT motherboard revision Rev. B. These boards feature a socketed CPU in PGA package on the left hand side of the motherboard.

WARNING

In no event will Cybercube Research Limited be liable for any damages whatsoever (including without limitation, damages for loss of business profits, business interruption, loss of business information, or the like) arising out of the use of, interruption in the use of, or inability to use the CyReL CaTTamaran Accelerator Module or the associated Software, even if Cybercube Research Limited has been advised of any possibility or likelyhood of such damages.

Opening your Atari computer and installing the CyReL CaTTamaran may void the warranty of your computer system. Refer to your documentation before attempting the following installation process.

INSTALLATION

Disassemble the TT to gain full access to the motherboard. If you do have a CPU daughterboard in your computer or the CPU is surface mounted on the right hand side of the motherboard, then refer to the alternate installation instructions available from Cybercube. These additional parts are necessary to install a CyReL CaTTamaran in the Rev. B motherboards: 6 x 33 ohms resistors and approx. 30 centimeters (12 inches) of wire of the same type already found on the CyReL CaTTamaran. The parts can be obtained from any good electronics store or Cybercube directly (Order code CRL17003).

NOTE: *We recommend the use of shrink tubing or insulation tape on any exposed metal parts or connections to avoid possible shorts.*

To begin, connect the BLACK CaTTamaran clip to pin 1 (upper right pin) of connector J602 (located besides the SER#1 & SER#2 ribbon cable connectors).

Locate U112 on the motherboard (a bit to the right above the CPU). Take a wire cutter and cut pin 12 of U112. Avoid any short circuits and verify that there is no connection between the cut-off pin #12 and the part remaining in the motherboard. If U112 is socketed, cut-off the pin 12 so that it no longer makes contact with the socket. Take one of the 33 ohms resistors and solder it to pin 6 of U112. Bend the resistor so that it lies flat above the CPU. Again, avoid any shorts.

Locate the three pin header W101 (above the FPU MC68882). Remove the jumper and solder the second 33 ohms resistor to the middle pin of W101. Bend the resistor so that it lies flat above the FPU. Avoid any contact with the FPU pins.

Locate U110 (to the right of U112). Solder the third 33 ohms resistor to pin 1 of U110. Solder the fourth 33 ohms resistor to pin 6 of U110. Bend both resistors as shown in the diagram.

The fifth 33 ohms resistor has to be soldered to pin E1 of the CPU (leftmost pin in the fifth row. Pin A1 is in the upper left hand corner of the CPU as marked by the gold colored line). Start in the upper left hand corner with pin row A and count down to pin row E. Now solder the fifth resistor to the exposed metal part of the CPU pin E1. It has to be attached as close to the surface of the motherboard as possible. This is a bit tricky, due to the space constraints (between the CPU and FPU sockets) but it can be done with a bit of patience.

Remove the red and green clip. Extend the wire ‹A› (Rev.B CaTTamaran boards, check upper left hand corner of the CaTTamaran) or wire ‹E› (Rev.A CaTTamaran boards) with a 7 cm (3") wire. Attach the free end of the extension wire to the 33 ohms resistor on pin 8 of U112.

Solder the sixth 33 ohms resistor to the free end of the wire ‹C›. Solder a 10 cm (4") extension to the free end of the sixth resistor. Solder the extension wire to the resistor on pin E1 of the CPU.

Remove the three pin CaTTamaran connector. Solder a 13 cm (5") extension wire to wire ‹E› (Rev.B CaTTamaran boards) or wire ‹D› (Rev.A CaTTamaran boards). Attach the free end of this extension wire to the resistor on the middle pin of W101.

Solder wire ‹D› (Rev.B CaTTamaran boards) or wire ‹B› (Rev.A CaTTamaran boards) to the resistor on pin 1 of U110. Solder wire ‹F› (Rev.B CaTTamaran boards) or wire ‹G› (Rev. A CaTTamaran boards) to the resistor on pin 6 of U110.

Last, attach the CyReL CaTTamaran to the rows B & C (starting at pin 1) of the J502 ST-RAM connector (using the interconnect strip if you do not own a ST-RAM board).

Your installation should now look like this:
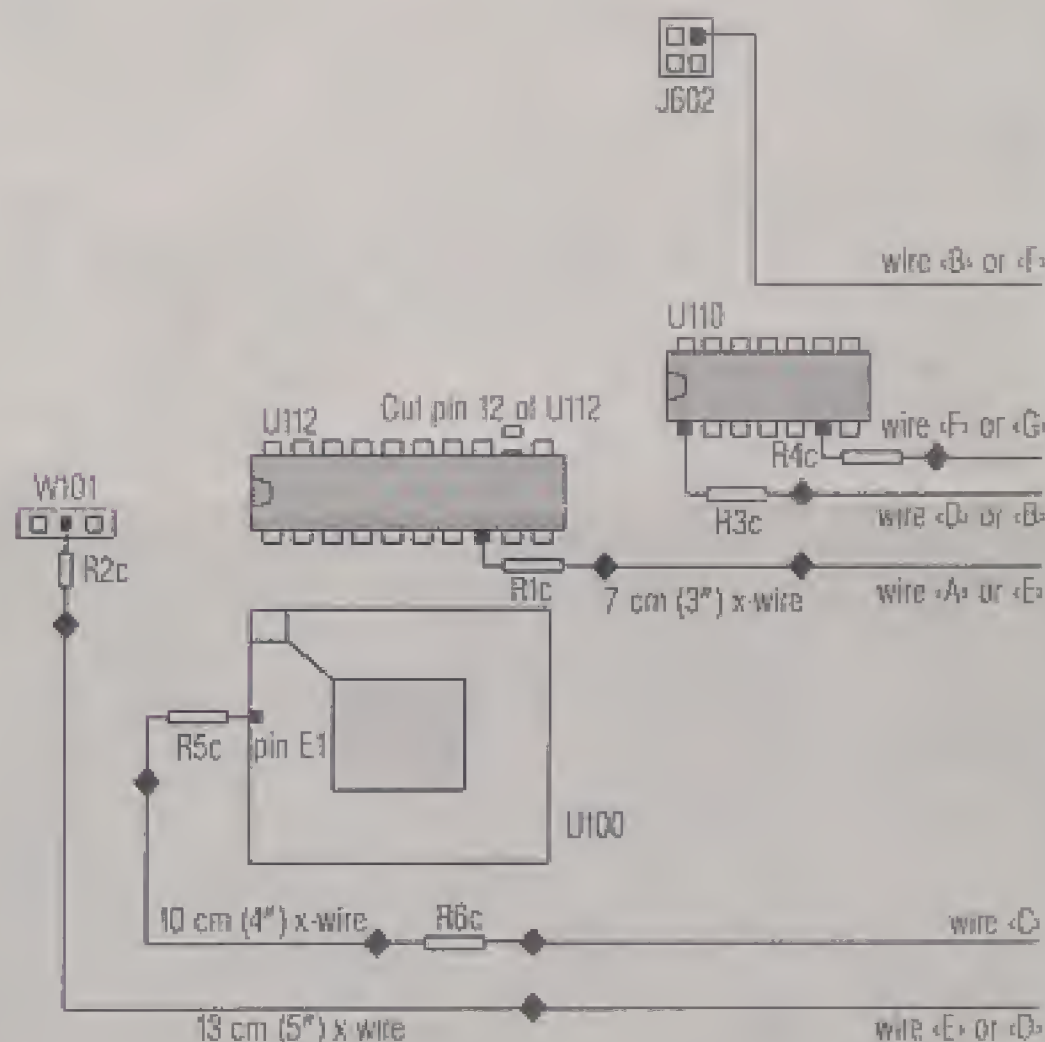
Notes:
R1c-R6c are 33 ohms resistors to be added by the user.
Wire indices ‹X› refer to Rev.B or Rev.A CaTTamarans
x-wire = Extension wires to be added by the user